

## ABSTRACT

A mobile communication system includes  $M$  transmission antennas,  $P$  encoders for receiving  $P$  information bit streams and encoding the received  
5 information bit streams with a space-time trellis code (STTC), and  $M$  modulators for modulating information bit streams output from the  $P$  encoders in a predetermined modulation scheme and outputting modulation symbol streams. A sequence used for channel estimation is generated, and the sequence is transmitted in substitute for at least one modulation symbol in a predetermined  
10 position through the  $M$  transmission antennas, for each of the modulation symbol streams output from the  $M$  modulators.